

**POLICY SYNTHESIS****FOOD SECURITY RESEARCH PROJECT - ZAMBIA***Ministry of Agriculture & Cooperatives, Agricultural Consultative Forum, Michigan State University – Lusaka, Zambia*

No. 47

(Downloadable at <http://www.waacs.msu.edu/agecon/fs2/zambia/index.htm>)

September 2011

**TRENDS IN MAIZE GRAIN, ROLLER AND BREAKFAST MEAL PRICES IN ZAMBIA****Auckland N. Kuteya and T.S. Jayne****Main Points**

1. Compared to the general price of goods and services as measured by the consumer price index, the prices of retail roller and breakfast maize meal have declined by between 34 and 51% in the major urban markets of Zambia between 1994 and 2010.
2. Inflation-adjusted wholesale maize grain prices have also declined over this period but by a smaller amount.
3. Inflation-adjusted marketing margins between the wholesale price of maize grain and the retail prices of roller and breakfast meal have declined from 41% to 64% since the early 1990s when the market liberalization process began. Since the early 1990s, there has been substantial new investment in commercial maize milling as well as by the informal hammer milling industry. Enhanced competition at this stage in the maize value chain appears to have conferred important food security benefits to urban consumers.

**INTRODUCTION:** Maize, which is mostly produced by smallholder farmers in Zambia, is the country's main staple food. Its price plays a major role in determining the country's food security situation. Maize is usually processed into roller and breakfast maize meal by large-scale commercial millers. Since the liberalization of maize marketing and pricing in the early 1990s, there has been major concerns about the competitiveness of the food milling and retailing sectors, especially during periods of high food prices.

**OBJECTIVES:** This analysis monitors trends in the prices of maize grain and maize meal and the marketing margins between them. Our analysis covers the period January 1994 to January 2011 for four urban markets of Zambia (Lusaka, Chipata, Ndola, and Kasama). The findings provide an indication of the degree of competition and performance of the maize milling and retailing industries in Zambia and whether real food prices are increasing or declining compared to the general level of prices as measured by the consumer price index.

**DATA AND METHODS:** The time series data used in this analysis were collected monthly over a period of 18 years from January 1994 to the latest available month at the time of this analysis, January 2011. Maize grain prices were collected by the Agricultural

Marketing Information Centre (AMIC), which initiated its price reporting system in January 1994. The Central Statistical Office of the Republic of Zambia, which also produces monthly CPI estimates, collects maize meal prices monthly. Our analysis focuses on four provincial headquarters namely, Lusaka, Chipata, Ndola, and Kasama. To adjust for inflation, prices were deflated by the consumer price index (CPI) scaled in terms of 2010 price levels. We specifically track the prices of wholesale maize grain, retail maize grain, retail roller meal, and retail breakfast meal in each of the four markets mentioned above. These prices were regressed on a linear time trend variable. We compute inflation-adjusted linear trend lines for each of these commodities over the 18-year period.

**FINDINGS:** Because of general price inflation, the nominal prices of maize grain, roller meal, and breakfast meal have risen steadily over the entire study period. However, after adjusting prices by the general CPI, maize grain prices show a relatively flat trend over time, indicating that they have risen by roughly the same rate as the general basket of consumer goods and services in Zambia. By contrast, the real prices of maize meal, both breakfast meal and roller meal, have declined fairly substantially. Figure 1 shows these trends for Lusaka, the capital of Zambia. The t-statistics of the trend variable are

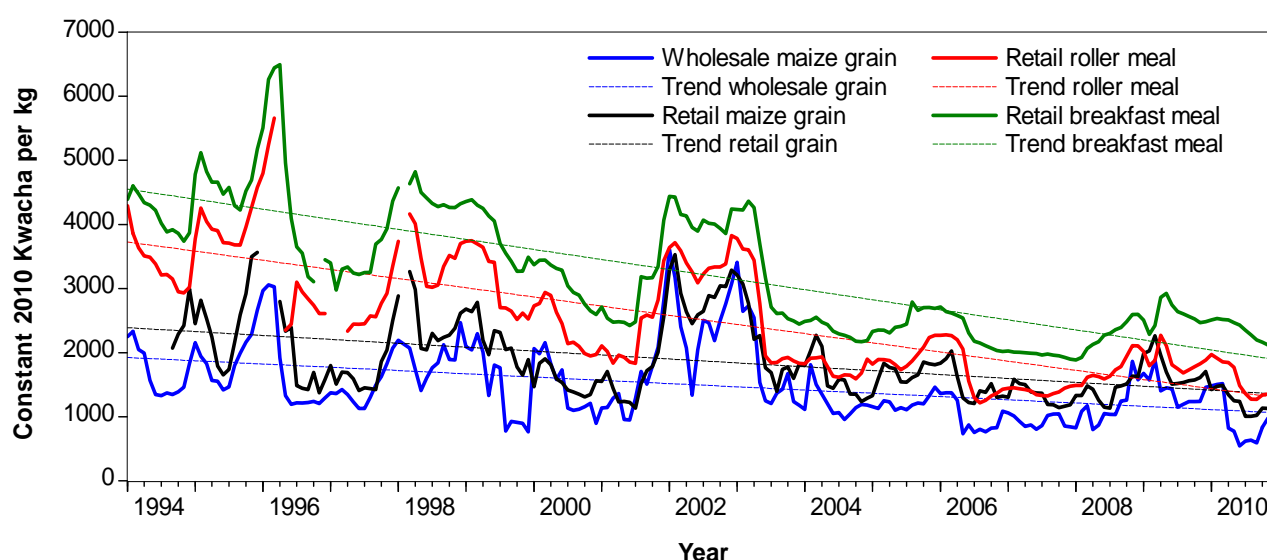
highly statistically significant, implying a clear downward trend in real prices of maize meal.

It is possible that the decline in real maize meal prices is simply reflecting a similar decline in real maize grain prices. However, this is not the case. In Lusaka, for instance, wholesale maize grain prices dropped by ZMK4.23/kg per month on average over the 1994-2010 period. By contrast, roller meal retail prices declined at a mean rate of ZMK11.92/kg per month while breakfast meal prices fell by ZMK13.07/kg per month in real terms. Consequently, the mill-to-retail marketing margin between wholesale maize grain and retail breakfast meal has been shrinking at the rate of K8.84/kg each month. Over the 17-year period between January 1994 and December 2010, retail breakfast meal margins have declined by over 60% in real 2010 ZMK, from

ZMK2500/kg in 1994 to ZMK740/kg in 2010. This has been the major factor in the long-term decline in real breakfast meal prices, from ZMK4500/kg in 1994 to roughly ZMK2900/kg in 2010, a 35% decline. Over this period, there has been major new investment in maize milling in Zambia. Competitive pressures on millers, including from the informal hammer milling sector which has also risen in importance with liberalization, appear to have conferred important benefits to consumers in the Lusaka area.

The data indicate that the milling-retailing marketing margins are usually the highest during periods of low maize prices and lowest during periods when maize prices are high. Millers and/or retailers may find it politically difficult to pass on the full extent of maize price rises to consumers during food crisis situations.

**Figure 1. Prices of Maize Grain, Roller and Breakfast Meal in Lusaka, in Constant 2010 ZMK/Kg**



**Table 1. Monthly Changes in Maize Grain, Roller and Breakfast Meal Prices, Real 2010 Kwacha per Kg in Lusaka**

	Wholesale maize grain	Retail roller meal	Retail breakfast meal	Wholesale grain to breakfast meal margin
Constant	1928.42*** (70.16)	3737.91*** (93.09)	4562.99*** (98.13)	2208.55*** (55.19)
Year/month	-4.23*** (0.50)	-11.92*** (0.64)	-13.07*** (0.70)	-8.84*** (0.43)
$R^2$	0.19	0.60	0.62	0.65
F-stat	46.13***	290.63***	320.70***	361.57***
Observations	205			

Standard errors are reported in parentheses.

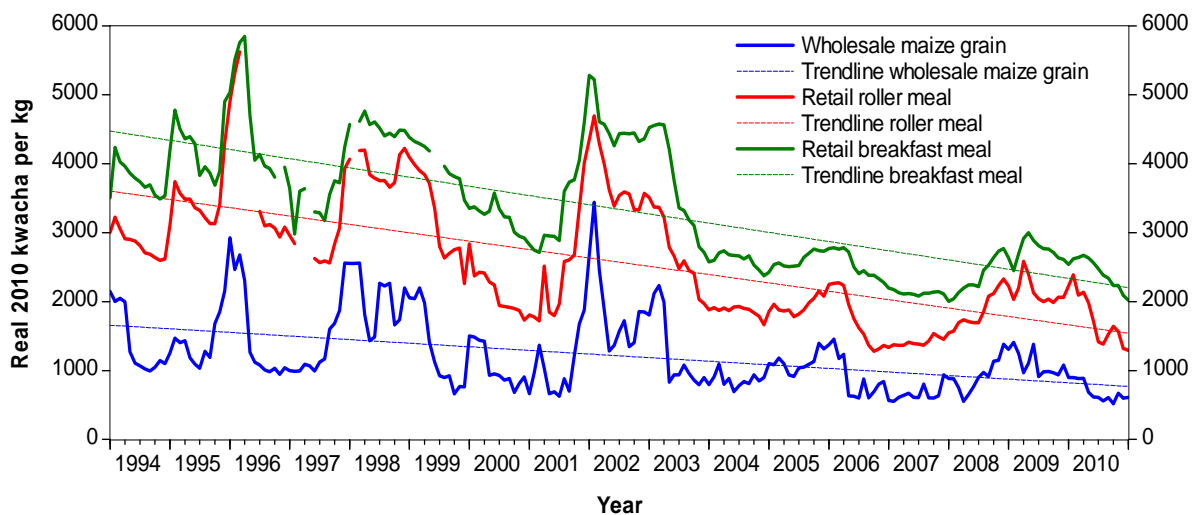
\*\*\* indicates significance at the 99% level.

Maize grain and maize meal prices for Chipata, Ndola, and Kasama show similar trends. As shown in Figures 2, 3, and 4, the inflation-adjusted prices of roller and breakfast meal declined markedly over the 1994-2010 period. Linear trend lines were highly statistically significant in all cases. Over the 1994-2010 period, real 2010 breakfast meal prices have fallen in half, from roughly ZMK4500 per kg to between ZMK2000-2300 per kg in Chipata, Ndola, and Kasama. The mill-to-retail marketing margins have also declined markedly, as in Lusaka; hence, there is a very robust pattern in the data indicating that compared to the general price levels of consumer goods and services, maize meal has become

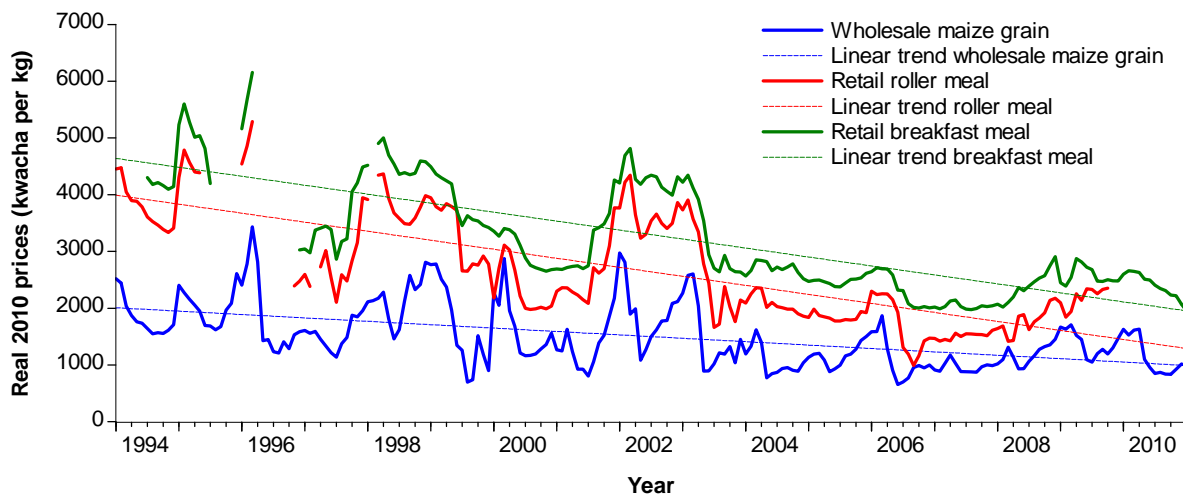
significantly less expensive over time. This does not necessarily mean that consumers' ability to afford maize meal has improved, but related analysis examining food prices relative to urban wage rates does reach this conclusion (see Mason et al. 2011) and is consistent with the findings here.

Maize grain prices have also declined in real terms, but to a lesser extent than maize meal prices. However, there have been episodes of major price spikes for both maize grain and meal, particularly in 2001/02 and 2002/03 when Zambia faced maize shortages.

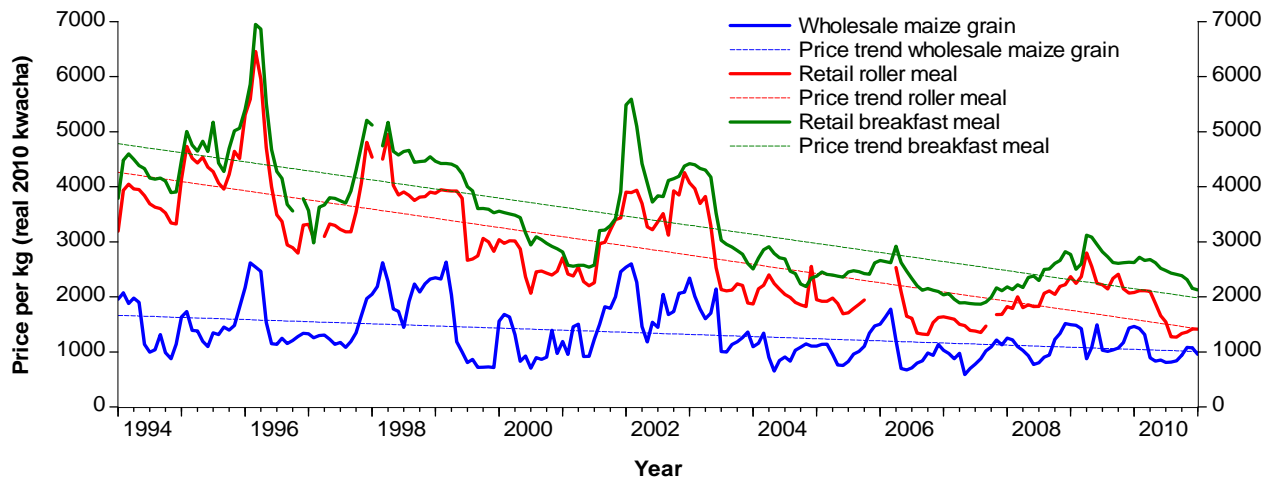
**Figure 2. Real 2010 Kwacha per Kg for Maize Grain, Roller and Breakfast Meal in Chipata**



**Figure 3. Constant 2010 Kwacha per Kg for Maize Grain, Roller and Breakfast Meal in Ndola**



**Figure 4. Constant 2010 Kwacha per Kg for Maize Grain, Roller and Breakfast Meal in Kasama**



#### CONCLUSIONS & POLICY IMPLICATIONS:

Despite short-term price spikes experienced mainly in 2001/02 and 2002/03 associated with maize shortages, real prices of maize grain, roller and breakfast meal over the past decade and a half have all declined significantly. Breakfast meal prices, expressed in 2010 prices, have fallen in half, from roughly ZMK4,500 per kg to between ZMK2,000 and ZMK2,300 per kg in Lusaka, Chipata, Ndola, and Kasama markets over the 1994-2010 period.

The decline in maize meal prices is partially due to a gradual decline in real maize grain wholesale prices, which can be partially attributed to input subsidies through various government programmes, the subsidized sale of maize on domestic markets by the Food Reserve Agency, good weather in recent years, and other factors affecting the price of maize grain (Burke, Jayne, and Chapoto 2011). However, real maize meal prices have declined more rapidly over time than maize grain prices. The mill-to-retail marketing margin between wholesale maize grain and retail breakfast meal has been shrinking at an average rate of between K6.78 - K10.51 per kg each month. The decline in the margin between maize meal and maize grain prices can mainly be attributed to increasing competition in maize milling, both among commercial millers as well as from the informal hammer milling sector which has also risen in importance since the market reforms in the 1990s.

Hence, the decline in real maize meal prices to consumers is due to two factors: those affecting the real price of maize grain over time, and those affecting the marketing margins between the price of grain and

meal. The statistically significant decline in the latter has conferred important benefits to consumers, mainly urban dwellers. Inflation-adjusted maize grain prices on the other hand, experienced a much more gradual decline over the same period. In conclusion, the conventional wisdom of ever-increasing maize meal prices does not hold in Zambia, at least for the entire study period.

**ACKNOWLEDGEMENTS:** The Food Security Research Project (FSRP) is a collaborative program of research, outreach, and local capacity building, between the Agricultural Consultative Forum, the Ministry of Agriculture and Cooperatives, and Michigan State University's Department of Agricultural Economics. Comments and questions should be directed to the FSRP Director, 26A Middleway Road, Kabulonga, Lusaka: Tel +260 (211) 261194; email, [kabaghec@msu.edu](mailto:kabaghec@msu.edu).

About the authors: Auckland N. Kuteya is research associate, FSRP, Lusaka, Zambia; T. S. Jayne is professor, International Development, Department of Agricultural, Food, and Resource Economics, Michigan State University, on long-term assignment with FSRP.

#### REFERENCES

- Burke, W., T.S. Jayne, and A. Chapoto. 2010. [Factors Contributing to Zambia's 2010 Maize Bumper Harvest](#). FSRP Working Paper No. 48. Lusaka: Food Security Research Project.
- Mason, N., T. S. Jayne, A. Chapoto, and C. Donovan. 2011. [Putting the 2007/08 Global Food Crisis in Longer-term Perspective: Trends in Staple Food Affordability in Urban Zambia and Kenya](#). *Food Policy* 36.3: 350–67.